

the young leafblade bent back parallel to the petiole, and hence is pulled out of the ground, after which it assumes an upright position. This single emergent cotyledon has an entire elliptic blade 3–10 mm. long. The plumule, at first inconspicuous, soon begins to develop into a rhizome which by mid-April may be several mm. in length. At this time, the subterranean cotyledon in the torn seed-coat is still present. Occasionally a leaf with entire or lobed blade arises from the young rhizome. More often, the green plant the first year has only the one emergent cotyledon. By late May, the seedlings die down; at this time the young rhizomes are about 5 mm. long.

The number of chromosomes of the sexually fertile southern Ohio plants has not been determined. It is entirely possible that they do not display as high polyploidy as do the more northern plants. *D. multifida* was shown to have different numbers in different specimens ($2n = 64$ and ± 112). Sexual fertility of *D. laciniata* (and perhaps of other species southward) necessitates a reconsideration of the question of hybrid origin of certain forms. It explains the rapid migration of the species.—E. LUCY BRAUN, CINCINNATI, OHIO.

A NEW BOTANICAL MASTERPIECE FROM DENMARK.¹—Although on this side of the Atlantic we are not accustomed to seeing first-class illustrated floras or pictorials of plants, the European countries have long been known for their superbly illustrated floras. Perhaps this is a part of the secret affecting the considerably more widespread interest in botany on the eastern side of the ocean. Descriptions in words never can be made so explicit, even by a skilled taxonomist, that others, especially amateurs, do not have greater difficulties in identifying the plant than if pictures are included. Even a relatively inexact drawing is more desirable than are the most exact of terms, not only for the layman interested in naming the plants he finds but also for the specialist. This principle was understood by the first botanists, although most of their illustrations are not always impressive to their more sophisticated colleagues of to-day. Too many authors of floras in modern times seem to prefer many words instead of a simple picture.

The first printed herbals of the 16th century are often at the same time collections of artistic drawings, some of which were made by the greatest artists of the Netherlands. Some of these flower pictures by renaissance

¹ BOTANISK ATLAS. Danmarks daekfrøede planter tegnede af Olaf Hagerup og Vagn Peterson.—Ejnar Munksgaard, København, 1956. 550 pp.

artists are still unsurpassed in their artistic quality, although it was not until the Linnaean system had been generally accepted that the scientifically most valuable botanical picture collections were published.

The largest and certainly the most superb of all pictorials ever published of the flora of a single country is the *Flora Danica*, which was begun by Professor Oeder in Copenhagen in 1761 and continued by several other Danish botanists during the 122 years that followed. This pictorial consists of 3240 large engravings of the higher and many lower plants of the Danish empire, including not only Denmark itself, but also Norway, the Faeroes, Iceland, Greenland, and the Danish West Indies (Virgin Islands). Many of the best artists of Denmark here made their everlasting contributions. A number of the volumes were also hand-colored by the artists. Pictures from *Flora Danica* hang on the walls of many outstanding homes in Scandinavia, and they were once used on Danish porcelain meant for the Russian court. A complete series of *Flora Danica*, uncolored, now costs several thousand dollars, while the rare colored editions are priceless.

Flora Danica never became popular, since its price was too high even for most botanical institutions. In this century, however, several Scandinavian institutions and homes were able to keep the series of more simple and smaller colored drawings of the flora of this part of Europe, initiated by the Swedish Professor Lindman. It was, however, not until the invention of the modern methods of reproduction of color photographs that such books became very popular. In America we have seen a great number of such books of low quality scientifically as well as artistically although some few first-class pictorials have been produced. But the undoubtedly highest quality in such books has been reached by the five magnificent volumes, "*Vilda växter i Norden*," initiated by the Swedish Professor Lagerberg and already published in two large editions in all the Scandinavian countries. Of high quality also is the popular flora of Sweden by Ursing based on colored drawings from color photographs, although its pictures are very small and not always very exact. This last book was a best-seller in Sweden—topping even the very best novels—for several years after the last war, and is probably found in the majority of Swedish homes.

Although the pictorials based on color photographs can be excellent, they never come up to the quality of the best drawings, and, because of their high printing price, the color pictures cannot be included in the common flora manuals. Therefore, despite the popularity of the colored pictorials, they have not eradicated the black-white drawings as botanical illustrations, but rather have enhanced their further development. Recent illustrations of this kind have been published in many European countries, but although the quality of them all has been kept very high, hardly any of them are characterized by the high scientific and artistic quality that is met with in the pictures by Dagny Tande Lid in the Norwegian flora by Lid, the Icelandic flora by Löve, and the Faeroes flora by Rasmussen.

The drawings by Mrs. Lid rarely fill a page, and some botanists have the feeling that they are reduced more than desirable although this cannot be avoided if the text is to be printed on the same pages. Therefore, in Norway and Great Britain somewhat larger illustrations are being published by Miranda Bödtker and Nordhagen, and Stella Ross-Craig, respectively, referring to already published manuals for the text. Both these publications are of the highest quality, although it must be said that their greatest disadvantage is their publication in small parts with long intervals between issues so that the complete floras will not be covered within a reasonable period of time.

Another work of this kind, though at once picturing all the higher plants of its region, has just been published in Denmark. It is a quarto-volume of 550 pages named "Botanisk Atlas," by Olaf Hagerup and Vagn Peterson. The first author is the head curator of the Botanical Museum in Copenhagen, the world-renowned author of a large number of scientific contributions, and the creator of some of the most fruitful ideas of modern botany, such as the hypothesis of difference in distribution of diploids and polyploids. The second author is an amateur botanist and an artist of high merit. Hagerup is responsible for the scanty text, the arrangement, the nomenclature, and all the many pictures of details and anatomical features, whereas Peterson has made the drawings of the entire plants and their main parts. Without going into detail, it can be stated that this new Atlas is comparable to nothing but the very best drawings in the classical *Flora Danica*, and even surpasses it many times in scientific exactness and perhaps also in the artistic quality of the detailed pictures drawn by Hagerup.

The text of the new Danish Atlas is as short as it can be, including the names of the plants in Danish and Latin, and very dry and short explanations of the figures. Somewhat more detailed descriptions are given of some of the pictures of characters typical of the families, and more particular information on the pollinating mechanisms—a speciality of Hagerup—is often included so that the reader here gets a small but very fascinating scientific report on these matters, some, at least, not previously published.

It cannot be expected that all the many drawings could be of the same high quality, and some of the pictures are perhaps rather dull and expressionless. This reviewer feels so about *Acorus Calamus*, which is shown only as a piece of the spathe with a spadix, and the same is true for *Rumex Acetosella*, which here cannot be separated from *R. tenuifolius* although the individual on which the drawing is based very probably belonged to the latter species. But the great majority of the pictures are of such a high quality that they can neither be described nor criticized, and especially all the drawings of details are so superb that nothing comparable to them has ever been published in such a book.

Because of *Flora Danica*, the Danish botanists have long been favored by being the owners of the most excellent and artistic pictorial ever published. Thanks to the united efforts of Hagerup and Peterson, their

publisher Ejnar Munksgaard, and the printer O. C. Olsen & Co., they are now also the possessors of the most valuable botanical atlas hitherto produced. It is indispensable not only for all European institutions, but also for all American botanists who need to make comparisons between American and European material. The Danish language is no obstacle to a foreign botanist since Latin names are international and almost all the details are self explanatory.—ÅSKELL LÖVE. INSTITUT BOTANIQUE DE L'UNIVERSITÉ DE MONTRÉAL, MONTRÉAL, QUÉBEC.

A NEEDED REVISION.¹—This revision was started with Dr. Ogden shortly before Dr. Fassett's death, and offers a revision appendix to bring the taxonomy and nomenclature into agreement with present usage. The manual remains largely the same as the first edition. It is not a complete overhaul.

The appendix concerns not only changes in nomenclature, but corrects references to many illustrations in the main text. It adds references that have appeared since 1940, and provides supplementary keys which take into consideration recent taxonomic reviews.

The inclusion of the detailed changes, made necessary by the appearance of the recent monumental floras of the Northeastern United States, will make this much more convenient to use.

On the jacket of this manual is given a formal definition of an aquatic plant, but Dr. Fassett's real definition was "one that appears in my book." This nicely expresses both the importance of this, the outstanding treatment of the aquatic plants of North America, and something of Dr. Fassett's pleasant sense of humor.—W. H. DRURY, JR., LINCOLN, MASS.

¹ A MANUAL OF AQUATIC PLANTS, by Norman C. Fassett, with revision appendix by Eugene C. Ogden. The University of Wisconsin Press, Madison, Wisconsin, 1957; ix plus 405 pp. at \$6.50.

Volume 59, number 705, including pages 217-244 was issued 3 October, 1957